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INDIA WEATHER REVIEW, 1942

ANNUAL SUMMARY

PART B

SNOWFALL

CONTENTS

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ANNUAL SUMMARY.

PART B.

SNOWFALL.

This part contains a summary of the reports of snowfall in the mountain regions to the north and northwest of India. These reports are collected by local officers from the local residents, headmen of villages, or from travellers who have passed through the region, and are then transmitted to this office.

The amount of snowfall is usually measured by finding the depth of undisturbed snow lying on the ground. The measurements are given in feet and inches. At places provided with raingauges the snow collected in the gauge is melted and measured as rain; this is indicated in the text and the amounts are given in inches and cents.

Cold Weather Period, January and February.

I.—Afghanistan.

Kabul.—Heavy snow fell in Afghanistan both in January and February; the falls were stated to be the heaviest for many years. In February alone snow fell at Kabul on 13 days to a total depth of 4 ft. The Paghman and Hindukush ranges had 20 inches of snow on the ground at the end of the period. The falls and accumulations were much above the average.

II.—Baluchistan.

Quetta.—Snow fell at the station on four days in January giving 8 inches of snow. Light to heavy falls also occurred on the surrounding peaks on four days during January. In February snow fell on the ground on one day giving about 3 inches of snow and on the peaks there were two moderate falls of snow.

III.—North-West Frontier Province.

(*a*) *Hazara.*—Snow fell on 17 days in January and on 18 days in February on hills above 4,400 ft. Falls and accumulations were much heavier than usual in both the months. The following table gives the approximate total depths of falls and accumulations for the period.

Locality.	January.		February.	
	Falls.	Accumulations.	Falls.	Accumulations.
	Ft.	Ft.	Ft.	Ft.
Birangali	5	5	4¾	4
Thandiani	10¾	8	9	10
Thalkot	21	10	13	12
Dungagali	31½	12	9½	5
Kalabagh	24	10	9½	4½
Malkandi	3	..	½	½
Nachha	14½	7	12½	7¾
Gundigali	12½	4	4½	5½
Mared	4	½	2¼	..
Nagan	16¾	8	4½	7
Paludran	16¼	10	15¾	8
Narang	19⅛	14	18½	10½

(*b*) *Dir, Swat and Chitral.—Drosh.*—Snow is reported to have fallen at the station on 11 days in January and on 8 days in February amounting to a depth of about 4 ft. each month. On the Lowarai pass the falls are reported to be about 7 ft. in January and 8 to 10 ft. in February. At the end of the period snow was present at the station and on the surrounding hills and passes. Falls were much above the average in both the months.

Malakand.—Snow fell on 12 days in January and on 10 days in February the falls amounting to 34 ft. and 35 ft. respectively. The falls recorded on 9th January 1942 and 18th February 1942 were exceptionally heavy each giving above 10 ft. of snow. Falls and accumulations were much above the average in both the months. Approximate depths of accumulations at the end of each month are given below:—

Locality.	January.	February.
	Ft.	Ft.
Lowarai	39	32
Bashkar	42	45
Mankyal	43	47
Ilam and Dwa Sarai	35	39
Hindu Raj	34	37

(*c*) *Khyber Agency.*—Snow fell in the Landi Kotal and Khyber areas to a depth of 2 to 3 inches in January and February.

(*d*) *Kohat.*—Fort Lockhart had 7½ ft. of snowfall in January and 3½ ft. in February. Falls were above normal.

(*e*) *North Waziristan.*—Snowfall was normal.

(*f*) *D. I. Khan.*—No snow fell during the season.

IV.—Kashmir.

(*a*) *Skardu.*—There were 9 light falls in January and many light to moderate falls in February to a total depth of 15 inches of snow at the station. Surrounding mountains got heavy falls in both the months. The snowline descended to 7,500 ft. a.s.l. Accumulations at the station and on the surrounding mountains were 6 inches and above 6 ft. respectively at the end of January and 1 ft. and 10 ft. respectively at the end of February. Falls and accumulations were much above the normal.

(*b*) *Dras.*—Snow fell on 10 days in January to a total depth of 3½ ft. and on 20 days in February to a total depth of 10¾ ft. Snowline descended to a height of 8,000 ft. in January and to 6,500 ft. in February. Falls were above the average in January and much above normal in February. Depths of accumulations were estimated to be about 3½ ft. on Dras plateau and more than 5 ft. on the surrounding higher passes at the end of January and about 7 ft. and more than 10 ft. respectively at the end of February. Accumulations at the end of the period were much above normal.

(*c*) *Srinagar.*—Several falls of snow were observed on the surrounding mountains and in the valley in both the months. Falls during both the months and the accumulations at the end of the period were above the average.

(*d*) *Kargil.*—Snowfall occurred on 6 days in January and on 15 days in February. Falls of the season were above normal in January and much above normal in February.

(*e*) *Sonamarg.*—Snow fell on 14 days in January to an aggregate depth of 8·08″ of snow water. The falls were below average. Accumulations of snow were about 7 feet at Sonamarg proper and about 9 ft. on the Zojilla pass.

In February snow fell on 22 days giving an aggregate depth of 33·18″ of snow converted into water at the station. The falls were very heavy and heavier still in the mountains. The Zojilla pass was blocked to traffic for

about 22 days. The depth of accumulation at the station was 13 ft. at the end of the period. Falls and accumulations were above normal.

(*f*) *Leh.*—Several snow storms occurred during the period. The falls were about the average in January and slightly below it in February. Accumulations of snow on summits of higher passes were estimated to be 3 to 4 ft. at the end of January and about 4 to 5 ft. at the end of February.

V.—PUNJAB.

(*a*) *Chamba.—Tissa range.*—Snow fell on 9 days in January and on 10 days in February above the height of 4,500 ft. The falls were above normal in both the months. Accumulations of snow on all the well known higher passes which were closed to traffic were estimated to be about 9 to 12 ft. deep at the end of the season.

Bhandal Range.—There were 7 snow storms in January and three long and heavy snow storms in February. The falls were on the whole above normal. The accumulations of snow on the Padri Pass (12,000 ft.) were estimated to be about 10 to 12 ft. deep at the end of the period.

Bharmaur Range.—Snow is reported to have fallen on 7 days in January and on 6 days in February to a depth of about 2 ft. in each month. Snowline descended to 6,000 ft. in both the months. Falls were above normal during the period. Accumulations of snow at 8,000 ft. above sea level were about 5 ft. deep at the end of the season and were normal.

Pangi Range.—There were five snow storms in January giving snowfall on 10 days to an aggregate depth of 2 ft. 4 inches and three snow storms in February giving snowfalls on 15 days to an aggregate depth of 9 ft. The falls were below normal in January and above it in February. At Kilar (8,000 ft.) the accumulation of snow at the end of the period was about 6 ft. in depth.

(*b*) *Kulu (Kangra District).*—Snow fell on the high ranges of the district to an aggregate depth of 8 ft. in January and 7 ft. in February. Falls were above the average in both the months. Snowline descended to a height of 4,000 ft. in January and 5,000 ft. in February. The following table gives the approximate depth of accumulations on important passes.

Locality.	January.	February.
	Ft.	Ft.
Awaru	8	6
Sawai	10	8
Sangaru	9	7
Hampta	14	12
Rohtang	10	8
Bhabu	4½	3
Bishleu	5	4
Jalori	7	5

The accumulations were about normal at the end of January and below normal at the end of February.

(*c*) *Kilba Hills (Simla District).*—Snow fell on 10 days each in January and February. The falls of the 16th January and 20th February were heavy and came down to 5,000 ft. The following table gives the estimated depth of accumulations on the well known peaks and passes at the end of January. Falls and accumulations were normal.

Locality.	January.
	Ft.
Kailas peak	18
Charang pass	15
Rupan pass	12
Buran pass	10
Shathal pass	10

All peaks and passes were closed to traffic at the end of February.

VI.—UNITED PROVINCES.

(*a*) *Almora.*—The following table gives the falls and accumulations of snow for the two months.

Locality.	January.	February.
	Ft.	Ft.
Falls.		
Malla Danpur	6	6
Chaudans	5½	5
Byans	10	9
Malla Darma	..	15
Accumulations.		
Pindar Valley	40	50
Nandakhat	40	40
Sunder Dhunga	35	35
Bankatiya	40	40
Masurleg	15	15
Lipu	22	30
Lampia	30	45
Nuwe	..	24

The falls were above normal in January and normal in February. Accumulations were normal in both the months.

(*b*) *Garhwal.*—There were 9 snowfalls in January and 6 in February the snowline descending to 4,000 ft. Depth of accumulations varied from 4 to 6 ft. at the end of January and from 1 inch to 2 ft. at the end of February. Falls and accumulations were below normal.

(*c*) *Naini Tal.*—Muktesar reported four falls of snow in January and two in February. Falls were normal in January and below normal in February.

VII.—ASSAM.

(*a*) *Kamrup.*—No snow fell during the period.

(*b*) *Sadiya Frontier Tract.*—Heavy snow fell on the Dirap to the north of Aieng. Falls on Abor hills were slightly above the average. Snowline came down to 5,000 ft. Falls and accumulations were normal.

(*c*) *Baliapara Frontier Tract.*—No information is available except that snowfall of the period was below normal.

Hot Weather Period, March to May.

I.—AFGHANISTAN.

Kabul.—Snow fell on three occasions to a total depth of 10 inches in the first fortnight of March and the falls were normal. After this there was no fall during the period. The crevices and summits of the Paghman and Hindukush ranges were full of snow at the end of the period.

II.—BALUCHISTAN.

Quetta.—No snow fell at the station during the period. Falls and accumulations were below normal.

III.—NORTH-WEST FRONTIER PROVINCE.

(*a*) *Hazara.*—Snow fell in the district on 4 days in March at elevations above 7,000 ft. Falls and accumulations for March are given below :—

Locality.	Falls.	Accumulations.
	Ft.	Ft.
Birangali	..	..
Thandiani	1/8	1½
Phalkot	1/6	3
Dungagali	..	2
Kalabagh	..	2
Kagan	1½	6
Paludran	5	6
Narang	7½	8

Falls were below normal and accumulations were normal. No information has been received for April and May.

(*b*) *Dir, Swat and Chitral.—Drosh.*—No snow fell either at the station or on the surrounding hills during the period. Passes were clear of snow at the end of the period though some snow existed on the surrounding hills. The snowfall was below normal and accumulations at the end of the period were about normal.

Chitral.—Accumulations of snow on the passes and peaks at the end of the month were about the average.

Malakand.—Snow fell on six days in March and on two days in April aggregating to depths of 8 ft. and 1 ft. respectively. The falls were above normal in March and below normal in April. No snow fell in May. Accumulations of snow on the well known peaks and passes are given in the following table. These were above normal.

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
Lowarai	27	12	7
Bashkar	41	19	12
Mankyal	42	20	5
Ilam and Dwa Sarai	36	17	16
Hindu Raj	34	15	8

(c) *Kurram.*—No information is available for March and April and no snow fell in May. Accumulations of snow on the well known peaks and passes were as given below :—

Locality.	Accumulations.
Sikaram peak	2 inches.
Badin peak	1 inch.
Zeran pass	¾ „

(d) *Khyber Agency.*—No snow fell during the period and there was no accumulation of snow on the surrounding hills and high peaks at the end of May.

(e) *South Waziristan.*—No reports were received for March and April. No snow fell in May. There were no accumulations of snow at the end of the period.

IV.—Kashmir.

(a) *Skardu.*—No snowfall or snowstorm occurred at the station during the period. Light to moderate falls of snow to an aggregate depth of about 2 ft. were however observed on the peaks of the surrounding mountains in March ; the snowline descended to about 9,000 ft. Accumulations of snow on the higher passes at the end of each month were about 8 ft., 5 ft., and 3 ft. respectively. Accumulations were normal.

(b) *Dras.*—Snow aggregating to a depth of 2½ ft. each month fell on 6 and 8 days respectively during March and April. The falls were normal. There was no snowfall in May. The accumulations of snow were as shown below :—

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
Dras	2½	*Nil.*	*Nil.*
Surrounding passes and hills	4½	3	1½

The accumulations were slightly below normal in all the months.

(c) *Srinagar.*—Several light to moderate falls of snow were observed on the surrounding mountains during each of the months. Both the falls and accumulations were above normal.

(d) *Kargil.*—Snow fell on six days in March on the well known surrounding peaks ; the falls and the accumulations at the end of the month were estimated to be about 3 ft. No snow fell in April and the previous accumulations had melted away by the end of the month. In May, traces of snowfall were observed on the highest peaks of the surrounding mountains on five days. Falls and accumulations were generally below normal.

(e) *Sonamarg.*—There were 8 falls of snow in March, five falls in April and one fall in May. Snow converted into water amounted to 6·2″, 9·4″ and 2·2″ respectively. The accumulations of snow on the ground at Sonamarg and on the Zojilla pass were as shown below at the end of each of the three months.

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
Sonamarg (ground)	5	Scattered patches of snow.	*Nil.*
Zojilla Pass	9	3	3

The accumulations were slightly below normal for the period.

(f) *Leh.*—In March snow fell on one day at the station and there were a few slight falls on distant summits. In April there were three or four snowstorms of varying severity ; in one of them the depth of snowfall was about one foot on the higher passes and the snowline descended to 11,500 ft In May snowstorms occurred on distant summits, the snowline descending to 13,000 ft. The falls were slightly below normal in March and normal in April and May. The accumulations were about 4 feet deep in all the months and these were normal.

V.—Punjab.

(a) *Chamba.*—No information is available for March and April. In May several snowstorms occurred above 9,000 ft. The accumulations of snow at the end of the period on well known high passes and peaks were estimated to be about 10 ft. and were normal.

(b) *Kangra.*—On the high ranges of the Himalaya mountains in the Kangra and Palampur Tahsils and the Kulu subdivision snow fell to an average depth of 1½ ft. in March and the falls were below normal. In April and May snow fell to an average depth of about one foot in each month.

The accumulations at the end of March were estimated to be about 8 ft. on the higher ranges, and on the passes they were as follows :—Sawai (1½ ft.), Sangaru (2½ ft.), Awaru (2 ft.), Hampta (6 ft.), Rohtang (4 ft.), Bhabu (2 ft.), Bishleu (2½ ft.) and Jalori (2 ft.). In April and May they were estimated at 3 ft. and 2 ft. respectively on the higher ranges while there was no accumulation of snow on the higher passes during these months. The accumulations were reported to be below normal.

(c) *Kilba* (*Simla District*).—Four snowfalls occurred in each of the months March, April and May ; one of the falls in March descended down to 5,500 ft. while in April and May they descended only to 8,000 ft. and 9,000 ft. respectively. All the passes except Charang Pass were passable by the end of April. Falls were normal in March and April, and slightly above normal in May. Accumulations were below normal at the end of the period.

VI.—United Provinces.

(a) *Garhwal.*—Snow fell on 6 days in March, on 2 days in April and on 4 days in May, the depth varying from 1 inch to 1 ft. in March, 1 to 3 inches in April and from 6 inches to 1 ft. in May. The falls were below normal in all the months.

(b) *Almora.*—The following table gives the amount of falls during and accumulations at the end of each month.

Locality.	March.	April.	May.
	Ft.	Ft.	Ft.
Falls.			
Malla Danpur	2	2	2
Chaudans	1¾	¼	1
Malla Darma	2¾	..	¼
Malla Johar	2	4	..
Byans	4¼	1	..
Accumulations.			
Pindar Valley	45	45	40
Nandakhat	40	45	40
Sundar Dhunga	30	35	35
Bankatiya	40	40	40
Nuwe	20	30	18
Lipu	26	16	..
Lampia	24	24	..
Masurleg	..	22	8¼

Falls were slightly below normal while the accumulations were generally above normal for the period.

Southwest Monsoon Period, June to September.

JUNE and JULY.

I.—Afghanistan.

Kabul.—Snow fell on two days in June on the Hindukush mountains. Falls were above normal. At the end of July snow had cleared from the mountains except in a few crevices. It was reported that this year accumulations lasted longer than usual.

II.—North-West Frontier Province.

(a) *Hazara.*—Falls occurred above an elevation of 10,000 ft. Approxi-

mate depths of falls and accumulations at the end of the period are given in the following table :—

Peaks.	Falls during the period.	Accumulations at the end of the period.
	Inches.	Ft.
Kachh	9	11
Mahli Burawai	7	9½
Khopra	5	1
Kuropass	5	4
Raji Bhogi	5	10
Mahli Battal	5	8
Sarool	5	4
Bajtar	5	11
Shah Kharan	5	4⅓
Jam Garh	5	6
Mussala Moosa	4	4
Mulki	3	3
Mokra	3	6½

Accumulations at the end of the period were above normal.

(*b*) *Dir, Swat and Chitral.—Drosh.*—No snow fell at the station during the period. At the end of the period snow was still present on the Madaglasht peak while passes and lower levels were free from snow.

Chitral.—There was no snowfall during the period. Depth of accumulation on the peaks was greater than usual.

Malakand.—No snowfall occurred in June and July. Approximate depths of accumulations on the well known peaks at the end of June are given below.

Locality.	Accumulations.
	Ft.
Lowarai	2
Bashkar	7
Mankyal	10
Ilam and Dwa Sarai	2

The above accumulations were slightly above normal.

(*c*) *Khyber Agency.*—No snow fell during June and July. No accumulation of snow remained on the mountain ranges and passes at the end of the period.

(*d*) *Kurram.*—Snow fell during June and July on Sikaram and Badina peaks to an approximate total depth of 12 inches. Approximate depths of accumulations of snow at the end of the period on the well known passes and peaks were as follows and were above normal.

Locality.	Accumulation.
	Inches.
Sikaram peak	6
Badin peak	3
Zeran pass	1½
Sikaram pass	1½

South Waziristan.—There was no snowfall in June and July.

III.—Kashmir.

(*a*) *Skardu.*—No snowfall occurred during the period. Thin accumulations were present on the higher peaks at the end of the period. Accumulations were about normal.

(*b*) *Dras.*—No fresh fall was visible in and around Dras district during the period. About half a foot of snow existed on the higher peaks of Lamchan, Marpachoo and Kawa Baal hills at the end of July. This was normal.

(*c*) *Srinagar.*—No snow fell during the period at the station or on the surrounding mountains. Accumulations of snow of last winter were present on the peaks and in the gorges of Pirpanjal mountain range at the end of July.

(*d*) *Gulmarg.*—Several light to moderate falls of snow occurred in June together with a few light falls in July on the peaks of the Afarwat and Handibal ranges. Snow accumulations on the peaks and in the gorges of these mountains were above normal at the end of the period.

(*e*) *Kargil.*—There was no snowfall during the period. Only slight traces of snow were visible on the highest peaks of the surrounding mountains at the end of July.

(*f*) *Sonamarg.*—A few light falls of snow which melted away soon, were observed on the surrounding high mountains during June and July. Traces of snow were present at the end of July on the adjacent mountain peaks.

(*g*) *Leh.*—A few snowstorms occurred in June on the distant summits. In July there were frequent snowstorms on the summits of mountains. Falls were on the whole slightly above normal. Accumulations at the end of the period were normal.

(*h*) *Muzaffarabad and Gurez.*—No snowfall occurred during the period. No accumulations were present on the mountain ranges at the end of the period.

IV.—Punjab.

(*a*) *Chamba.*—A few falls of snow occurred during June and July above 11,000 ft. The accumulation of snow on peaks and high passes was normal.

(*b*) *Kulu (Kangra).*—Snow fell above 13,000 ft. during the period. Accumulations were much heavier than usual.

(*c*) *Kilba (Simla District).*—Occasional light falls of snow occurred on high peaks above 13,000 ft. in June. Snow melted away soon. A few light falls of snow were observed above 15,000 ft. in July. The falls were above the average in both the months. All the passes were open to traffic.

V.—United Provinces.

(*a*) *Almora.*—The amounts of the falls in each month and the accumulations at the end of each month as estimated by the Patwaris are given in the table below :—

Locality.	June.	July.
	Ft.	Ft.
Falls.		
Malla Danpur	1	½
Byans	¾	½
Chaudans	¾	1
Malla Darma	½	½
Malla Johar	..	½
Accumulations.		
Pindar Valley	35	30
Nandakhat	35	30
Sundar Dhunga	35	30
Bankatiya	35	30
Lipu	16	6
Lampia	24	9
Masurleg	8	8
Nuwe	15	13

The falls were below normal whereas the accumulations of snow were above normal.

AUGUST AND SEPTEMBER.

I.—Afghanistan.

Kabul.—One light snowfall was observed at the end of September on the peaks of Paghman and Hindukush hills (14,000).

II.—North-West Frontier Province.

(*a*) *Dir, Swat and Chitral.—Drosh.*—No snow fell in August at the station or on the surrounding hills and peaks of Lowarai and Madaglasht. In September two falls were observed on the Lowarai pass giving 6 inches and 8 inches of snow respectively. No accumulation of snow was present on the passes, but snow to a depth of 6 inches was present on the surrounding hills (height above sea level 12,000 ft.). Snowfall was early and was above average.

(*b*) *Malakand.*—No information is available for August. A fall of 6 inches of snow was recorded in September. Snowfall for the period was below average. The depths of accumulations on some well-known peaks and passes at the end of the period are given below :—

Locality.	Depth of accumulations.
Bashkar	4 ft.
Mankyal	5½ ft.

The accumulations were above normal.

III.—Kashmir.

(*a*) *Skardu.*—There was no snowfall in August. In September there were occasional light falls on the surrounding higher passes. Slight accumulations were present on these passes at the end of the period.

(*b*) ***Dras.***—No snowfall occurred at Dras during the period, but in September light falls were observed on the surrounding hills of Lamchan and Kawa Baal, where snowline descended to about 11,000 ft. Accumulations of snow on these hills at the end of the month were about 6 inches deep.

(*c*) *Srinagar.*—No snowfall was reported in August. A few light to moderate falls were observed on the surrounding mountain ranges during the second half of September. Snowfall on the whole was above normal.

At the end of the season a thin layer of fresh snow existed on the peaks of the surrounding high mountain ranges.

(*d*) *Gulmarg.*—A few light falls of snow occurred on the surrounding peaks of Handibal and Affarwat in August, while several light to moderate falls were observed on the peaks in September. Falls were normal in August and above normal in September; the accumulations of snow at the end of the period on the surrounding mountains were estimated to be above the average.

(*e*) *Kargil.*—No snowfall was observed during the period.

(*f*) *Sonamarg.*—No snow fell at the station or on the surrounding hills in August. In September occasional falls occurred on the surrounding higher mountains, but the snow melted away very soon. Heavy accumulation of snow existed on the Zojilla mountain at the end of the season.

(*g*) *Leh.*—In August snowstorms were very frequent on the summits of high mountains; they were also frequent in September. The falls were above normal in August and normal in September. The depth of accumulation on the higher passes at the end of the season was about 3 ft.

IV.—The Punjab.

Kilba hills.—There were occasional light snowfalls over the higher peaks, in September when the snowline descended to 10,000 ft. All the passes remained passable during the period.

V.—United Provinces.

(*a*) *Almora.*—Estimated depths of falls and accumulations of snow some well-known peaks and passes are given in the table below for the t months :—

Locality.	August.	September
	Inches.	Inches.
Falls.		
Malla Danpur	6	12
Malla Darma	4	*
Byans	3	6
Malla Johar	18	*
Chaudans	12	12
Accumulations.	Ft.	Ft.
Pindar Valley	30	30
Nandakhat	30	30
Sundar Dhunga	25	25
Bankatiya	30	30
Lipu	6	10
Lampia	9	15
Masurleg	8	9
Nuwe	9	*

*Figures not received.

The falls were below normal while the accumulations were generall normal or slightly above it.

(*b*) *Garhwal.*—No snowfall was observed during the period.

The Retreating Monsoon Period—October to December.

I.—Afghanistan.

Kabul.—Snow fell on the peaks of the Paghman and Hindukush hills on 6 days in October, 4 days in November and one day in December. In the Kabul valley itself there were two falls in December. The passes were open to traffic. The snowfall was reported to be below normal.

II.—Baluchistan.

Quetta.—Reports for the period ending 15th December indicate that there was no snowfall at Quetta. Two falls giving about one foot of snow were however observed on the surrounding mountain ranges in December. The falls were normal.

III.—North-West Frontier Province.

(*a*) *Hazara.*—No reports were received for October and November. Falls and accumulations for December were as shown below :—

Locality.	Falls.	Accumulations.
	Ft.	Ft.
Birangali	1¼	1¼
Thandiani	3½	3½
Phalkot	3¾	3¾
Kalabagh	6½	6½
Dungagali	7½	7
Kagan	3	2
Paludran	4¼	2½
Narang	5½	3½
Sundigali	13	5
Malkandi	¾	¼

Both falls and accumulations were above normal.

(*b*) *Dir, Swat and Chitral.—Drosh.*—There was no snowfall at the station. But on the Lowarai pass and on the hills surrounding the station snowfalls were observed in October and November, but were less than usual. The accumulations at the end of November on the surrounding hills were estimated as 2 ft.; accumulations were visible at the end of December also, but were below normal.

Malakand.—Snow fell on one day each in October and November to depths of 7 inches and 2 inches respectively. The falls were below average. The accumulations at the end of October and November are given in the following table :—

Locality.	October.	November.
	Ft.	Ft.
Bashkar	4	4
Mankyal	5½	2½
Lowarai	..	1¼
Ilam and Dwasarai	..	1
Hindu Raj	..	2½

No report has been received for December.

(*c*) *Kurram.*—During December there was one snowfall at Parachina proper to a depth of ½ inch while the surrounding peaks had four falls. Sno existed on the high mountains at the end of the period.

(*d*) *South Waziristan.*—Light snow fell on the high peaks around Razma on the 28th November. Razmak and Wana had a light snowfall givin 2 inches of snow in December.

III.—Kashmir.

(*a*) *Skardu.*—There was no snowfall in October. In November th surrounding mountain ranges and passes got light snowfalls occasionally the snowline descending to 9,000 ft. A few light falls of snow, measurin 0·12″ of water when melted occurred at the station in December while o the surrounding passes and ranges the total snowfall is estimated to hav been 2 to 3 ft. deep. At the end of the period about 2 inches of accumula tion remained at the station with 2 to 3 ft. of snow on the surrounding passes Falls and accumulations were normal.

(*b*) *Dras.*—Snow fell on the surrounding mountains on two days in Octo ber, on three days in November and on 11 days in December to a total depth of 6 inches, 4 inches and 2 ft. respectively. Snowline descended to a heigh of 8,000 ft. in December. The falls were below normal for the period Accumulations were 4½ ft. deep on the peaks of Marpachhoo, Lamchan and Kawa Baal at the end of the period.

(*c*) *Srinagar.*—A few light to moderate falls of snow were observed on the surrounding mountains in each of the months. The falls were abou normal while the accumulations were above normal in October and Nov ember, and normal in December.

(*d*) *Kargil.*—No snow fell in October, but traces of snowfall were ob served on the highest peaks of the surrounding mountains. There was only one fall in November. In December there were two falls giving 2 inches of snow at the station and 2½ ft. of snow on the peaks of the surround ing mountains.

(*e*) *Sonamarg.*—At the station snow fell on one day in October, on four days in November and on thirteen days in December. The snow when melted amounted to 0·60″, 0·94″ and 5·57″ of water respectively. The falls were normal for the season. At the end of the period 3 ft. of snow lay at the station and 5 ft. on the Zojilla pass.

(*f*) *Gurez.*—Light to moderate snowfalls occurred on the surrounding mountains in October and November. In December there were 9 falls of snow aggregating to a depth of 4¼ ft. at the station. It is reported that Tragbal Pass and Burzil Pass had snowfall to aggregate depths of 7 ft. and 9 ft. respectively in December.

(*g*) *Leh.*—No snow fell in October and November. A few falls occurred in the latter half of December, the snowline descending to 12,000 ft. passes were closed to traffic at the end of the period, and the accumulations were about 2 ft. deep on the higher passes.

(*h*) *Muzaffarabad.*—No snowfall occurred in October. There was only one fall each in November and December on the surrounding mountains.

V — Punjab.

(*a*) *Chamba.*—No reports were received for October and November. December, two snowstorms were reported on each of the ranges Chamba, ıandal and Bharmaur, while Tissa range experienced five snowstorms. The owline descended to a height of 3,000-3,500 ft. The falls were about rmal, but were exceptionally heavy at higher levels about 9,000 ft. The cumulations of snow at the end of December were above normal and were given below :—

Locality.	December.
	Ft.
hatri	3½
ɔh	2½
ıwas	3½
ıangu	3
gti	2½
le	3½
ch pass	10
ami pass	12
ırati pass	15
dri (elevation 12,000 ft.)	12

(*b*) *Kulu (Kangra District).*—No snow fell in October and November. the first half of December two heavy falls were reported. The falls were nfined to altitudes above 8,000 ft. in Seraj Tahsil and 6,500 ft. in Kulu. he depths of accumulations at the end of the period were 4 ft. on Hamta ıss and 5 ft. on Siri Khand pass. Bishlew and Jalori passes in Seraj Tahsil ıd 3 and 2 ft. of accumulations respectively. Only Jalori pass was open traffic. The accumulations were normal.

(*c*) *Kilba (Simla District).*—There was practically no snowfall in October ıd November. December witnessed 4 falls. The fall of the 15th December was heavy and the snowline descended to 7,000 ft. Falls during the ɔriod were about normal. All the passes were closed to traffic at the end the period.

VI.—United Provinces.

(*a*) *Muktesar.*—Snow fell at the station on the 15th and 16th December. he snowfall was heavy, but was confined to higher peaks only. Falls were ɔove normal.

(*b*) *Almora.*—The snowfall of the period was generally below the average. The total amounts of the falls and the accumulations as estimated by the Patwaris are given below :—

Locality.	October.	November.	December.
	Ft.	Ft.	Ft.
Falls.			
Malla Danpur	½	2½	5
Byans	¼	..	No reports received.
Malla Darma	2¾	2	
Chaudans	½	½	
Malla Johar	½	..	
Accumulations.			
Pindar Valley	32	32	36
Sundar Dhunga	32	34	35
Nandakhat	32	34	..
Bankatiya	42	44	48
Lipu	8	..	..
Lampia	12	..	..
Masurleg	9	9	..
Nuwe	..	8	..

Accumulations were generally average or slightly above it.

(*c*) *Garhwal.*—There was one fall in October and three in December. No snow fell in November. The fall in October was confined to higher peaks in the northernmost parts of the district. In December, the depth of snowfall was about 2 inches to 5 inches at higher altitudes, the snowline descending to a height of 7,600 ft. The falls during the period were slightly below normal.

VII.—Assam.

(*a*) *Kamrup.*—No snowstorms occurred during the period. The accumulations on the well-known peaks of Mekchana, Chunchunga and Kapegangri were 4 to 5 feet. The accumulations were generally normal.

(*b*) *Sadiya Frontier Tract.*—Snowfall on the upper Minyong Abor hills was normal. Snow accumulation was normal in Pasighat area. There was considerable snow on peaks opposite Theroliang, the snowline descending to 8,000 ft.

(*c*) *Baliapara Frontier Tract.*—There was no snowfall in the Lower hills. In the Upper hills the snowfall was below normal.

Summary.

Cold Weather Period—January and February.—Snowfall was much above ıe average in Afghanistan, the North-West Frontier Province and Kashmir, ɔove the average in the Punjab and about normal in the United Provinces. he accumulations were also much above normal in Afghanistan, the North-Vest Frontier Province and Kashmir, and about normal in the Punjab nd the United Provinces.

Hot Weather Period—March to May.—Snowfall was normal in Afghanisın, Kashmir and the Punjab, slightly below normal in the North-West rontier Province, and below normal in Baluchistan and the United Proinces. The accumulations were normal in the North-West Frontier Proince, Kashmir and the United Provinces, slightly below normal in the unjab and below normal in Baluchistan.

South-West Monsoon Period—June and July.—Snowfall was above the average in Afghanistan and the Punjab, and normal or slightly below it elsewhere. The accumulations were generally above normal in Afghanistan, the North-West Frontier Province, the Punjab and the United Provinces, and normal in Kashmir.

South-West Monsoon Period—August and September.—The falls and accumulations were generally slightly above normal except in the United Provinces where the falls were below normal.

The Retreating Monsoon Period—October to December.—The falls were normal in Baluchistan, the North-West Frontier Province, Kashmir and the Punjab, and below normal in Afghanistan and the United Provinces. The accumulations were generally normal.

MGIPC—M—XI-1-4—1-11-44—150.